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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/874,128	06/05/2001	Michael J. Siwinski	82689THC	6260

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EXAMINER	
JORGENSEN, LELAND R	

ART UNIT	PAPER NUMBER
2675	5

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/874,128	SIWINSKI, MICHAEL J.	
	Examiner	Art Unit	
	Leland R. Jorgensen	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 – 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 5, 9, and 10 use the term efficiency without defining the term either in the specification or in the claims. For light emitting diodes, at least four types of efficiency is described in the literature, including: internal quantum efficiency, external quantum efficiency, overall efficiency, and responsivity. See Saheh and Teich, *Fundamentals of Photonics* (New York: John Wiley & Sons, Inc. 1991) pp. 600-605; and, Richard C. Dorf, ed., *The Electrical Engineering Handbook* (Boca Raton: CRC Press, 1993) pp. 1766-1668. In addition, the eye is more sensitive to certain colors such as green and white as compared to blue or red and thus . Thus, white light can be described as more efficient than blue or red light since the eye is more sensitive to white light. The remaining claims are rejected as dependant on rejected independent claim 1 or 5.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 4, 5, and 8 - 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al., USPN 6,069,440, in view of Hill, Jr., USPN 5,790,096, and Xu et al., USPN 6,133,692.

Claims 1, 5, 9, and 10

Shimizu et al. teaches a color electroluminescent display. Shimizu teaches an LED display device comprising a plurality of differently colored light emitting elements [three RGB light emitting diodes] having different light emitting efficiencies and white light emitting elements [white light emitting diode]. Shimizu, col. 21, line 49 – col. 22, line 55; and figure 12. Shimizu also teaches means for displaying the monochrome portion of an image using only white light emitting elements. Shimizu, col. 21, lines 3 – 31; and figures 10 & 11.

Shimizu does not teach a digital image processing circuit for converting at least a portion of a color digital image to be displayed on the display to a monochrome image.

Hill, Jr. teaches a digital image processing circuit [color to monochrome reduction device 21] for converting at least a portion of a color digital image to be displayed on the display to a monochrome image. Hill, Jr., col. 7, lines 11 – 40; figure 1; and table I.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the digital image processing circuit as taught by Hill, Jr. with the color electroluminescent display of Shimizu. Hill, Jr., invites such combination by teaching,

> In accordance with the invention, images on a flat panel display may be upsized, downsized, positioned and oriented automatically or through use of user controls. Further, monochrome to color, color to monochrome, color to color, and monochrome to monochrome video processing is accommodated. Still further, power to the electronic control system is sequentially turned on and off for power conservation as video appears, disappears, and reappears.

> In addition, in accordance with the invention, video data may be received at the video rate and asynchronously output to a flat panel display at the display rate without any loss of resolution. Further, both video formats and types are automatically detected.
>
> The present invention also provides plug-in modules for an input video connector at which video is received, for color frame buffers where image content is stored, and for a flat panel interface module to which a flat panel display attaches. All known flat panel displays, and video formats and types for flat panel displays may be accommodated without compromising power conservation. The above and other aspects of the invention are summarized below.

Hill, Jr., col. 2, lines 4 – 24. Hill, Jr., specifically teaches,

> In a further aspect of the invention, full color images may be reduced to a plural bit gray scale for display on a monochrome screen. Further, monochrome to monochrome, monochrome to color, and color to color image processing also is provided.

Hill, Jr., col. 2, lines 58 – 62. Hill, Jr., also notes,

> More particularly, all flat panel display types including LCD, electroluminescent, gas plasma, FED and other flat panel types may be supported.

Hill, Jr., col. 7, lines 7 – 9.

Although Hill, Jr., notes that it supports all flat panel display types including electroluminescent displays, neither Shimizu nor Hill, Jr., specifically teach that the color electroluminescent display is an organic electroluminescent display.

Xu teaches an white light organic electroluminescent devices for generating white light. Xu, col. 1, lines 5 – 7.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent devices for generating white light as taught by Xu with the color electroluminescent display as taught by Shimizu and Hill, Jr. Xu invites such combination by teaching,

> Light emitting diode (LED) arrays are becoming more popular as an image source in both direct view and virtual image displays. One reason for this is the fact that LEDs are capable of generating relatively high amounts of light (high luminance), which means that displays incorporating LED arrays can be used in a greater variety of ambient conditions. For example, reflective LCDs can only be used in high ambient light conditions because they derive their light from the ambient light, i.e. the ambient light is reflected by the LCDs. Some transflective LCDs are designed to operate in a transmissive mode and incorporate a backlighting arrangement for use when ambient light is insufficient. In addition, transflective displays have a certain visual aspect and some users prefer a bright emissive display. However, these types of displays are generally too large for practical use in very small devices, such as portable electronic devices.
>
> Organic electroluminescent device (OED) arrays are emerging as a potentially viable design choice for use in small products, especially small portable electronic devices, such as pagers, cellular and portable telephones, two-way radios, data banks, etc. OED arrays are capable of generating sufficient light for use in displays under a variety of ambient light conditions (from little or no ambient light to bright ambient light). Further, OEDs can be fabricated relatively cheaply and in a variety of sizes from very small (less than a tenth millimeter in diameter) to relatively large (greater than an inch) so that OED arrays can be fabricated in a variety of sizes. Also, OEDs have the added advantage that their emissive operation provides a very wide viewing angle.

Xu, col. 1, lines 10 – 38. Xu adds,

> Accordingly, it is highly desirable to provide an organic electroluminescent device for generating substantially white light.
>
> It is a purpose of the present invention to provide a new and improved white light organic electroluminescent device for generating white light with improved uniformity of primary color components.
>
> It is a further purpose of the present invention to provide a white light generating organic electroluminescent device with improved efficiency and reliability.

Xu, col. 1, lines 58 – 67. Xu concludes,

> Therefore an organic electroluminescent device has been provided for generating substantially white light with an improved balance of primary color components. By enhancing and balancing the primary color components, a white light generating organic electroluminescent device is provided with improved efficiency and reliability. Driving currents to the diode can be reduced while still

> achieving sufficient light, thereby increasing longevity and reducing power consumption.

Xu, col. 4, lines 17 – 25.

The claims add that the white light emitting diode has light emitting efficiencies greater than at least one of the colored light emitting diodes. Claims 9 and 10 add that the white light emitting diode is at least twice as efficient as at least one of the colored light emitting diodes. As described above, the term efficiency is not defined in either the specification nor the claims. However, if efficiency is defined in terms of the sensitivity of the eye to light, a white light is at least twice as efficient as either a red or a blue light. Hill teaches that the digital image processing circuit converts a color digital image to a monochrome digital image by combining 5/16, 9/16, and 2/16 of the red, green and blue color signals, respectively. That is, the eye sees a light operating at 2/16 of full power and a blue light operating at full power as having the same intensity. Thus, a white light would be eight time more efficient than a blue light.

Applicant also admits in the specification that it is known in the art that a white OLED is at least twice as efficient as at least one of the color OLEDs. The specification states in relevant part,

> It is commonly know that the various colors of OLED materials do not create light with the same efficiencies. The present invention describes an OLED display device which contains red, green, blue and white light emitting elements. The white light emitting elements are at least twice as efficient as the red and blue light emitting elements.

Specification, page 2, line 28 – page 3, line 3. The specification adds,

> It is commonly know that the luminance content of a colored image can be represented by adding together a weighted portion of each of the intensities of the red, green and blue components of the image. For example, the luminance of a colored pixel can be represented by:

Luminance = (5/16) * red + (9/16) * green + (2?16) * blue

Specification, col. 4, lines 20 – 25.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine a white OLEDs having an efficiencies twice the efficiency of at least one of the colored OLEDs with the method and display as taught by Shimizu et al., Hill, Jr., and Xu et al to produce a more efficient display.

Claims 4 and 8

Hill teaches that the digital image processing circuit converts a color digital image to a monochrome digital image by combining 5/16, 9/16, and 2/16 of the red, green and blue color signals, respectively. Hill, Jr., col. 7, lines 20 – 34; and table I.

5. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al., in view of Hill, Jr. and Xu et al. as applied to claims 1 or 5 above, and further in view of Shimoda, USPN 5,944,829.

Claims 2 and 6

Neither Shimizu et al., Hill, Jr., nor Xu teach a battery and the power saving mode.

Shimoda teaches a laptop computer that is in battery powered device. It is inherent that a laptop computer have a display. Shimoda teaches a power monitor [power information module 30] for monitoring the power level of the battery 22, and a control circuit [CPU 12] connected to power monitor for converting the display [coupled through input/output device 14] to a power saving mode of operation [operating mode 26, 27, or 28] when the battery power reaches a

predetermined level. Shimoda, col. 3, lines 41 – col. 4, line 42; col. 6, lines 4 – 11; and figures 1 and 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the power saving mode as taught by Shimoda with the color organic electroluminescent display as taught by Shimizu et al., Hill, Jr., and Xu. Shimoda invites such combination by teaching,

> Many modern computer systems are implemented in light weight, portable designs that enable a user to carry the computer wherever the user may travel. Such portable computers are called "laptops" or "notebooks" (hereinafter generally referred to as a laptop). Laptops typically include alternate sources of power so that the user may either plug the laptop into an electrical wall outlet or use a battery mounted within the laptop. Battery life is an important design characteristic for laptop computers since users desire a maximum amount of time to use the laptop while away from an environment affording access to an electrical outlet.

Shimoda, col. 1, lines 14 – 24. Shimoda adds,

> The present invention provides a new and improved power conservation scheme for use in connection with user applications. Generally, each user application is implemented with a power conservation software module that can include a user interface. The power conservation module stores default preferences or user designated preferences, via the user interface, regarding battery life, monitors power characteristics of the laptop, for example via communication with the APM, and operates the user application in accordance with the default or user preferences and the monitored power characteristics.

Shimoda, col. 2, lines 48 – 58. Shimoda concludes,

> In this manner, according to the present invention, information acquired by a utility such as APM is made available for use in setting actual operating characteristics of a user application in relation to the state of a battery being used to power a portable computer.

Shimoda, col. 6, lines 30 – 34.

6. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al., in view of Hill, Jr. and Xu et al. as applied to claims 1 or 5 above, and further in view of Nelson et al., USPN 6,311,282 B1.

Claim 3 and 7

Neither Shimizu et al., Hill, Jr., nor Xu teach a battery saving mode switch.

Nelson teaches a battery saving mode switch [Suspend/Resume button]. Nelson, col 1, lines 11 – 14; and col. 10, lines 12 – 16.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the battery saving mode switch as taught by Nelson with the color organic electroluminescent display as taught by Shimizu et al., Hill, Jr., and Xu. Nelson invites such combination by teaching,

> Portable computers are well known, as are personal "communicators" of the type exemplified by the Motorola Envoy. Such portable computing devices are invariably battery powered. Since presently available batteries have very limited storage capabilities, it is important that such portable computing devices (both computers and communicators) limit their power draw. Therefore there is known a wide range of techniques for conserving power in such battery powered devices. These power conservation methods include shutting down portions (various subsystems) of the computer when not in use, as well as putting the computer CPU (the main processor) to "sleep" when its capabilities are not being used.

Nelson, col. 1, lines 16 – 29.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj

STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600